

**REMARKS**

Claims 1-4 are pending in this application. Claims 1 and 2 have been amended herein. No new matter has been added by this amendment.

**The title of the invention is not descriptive (Office action point 1).**

The Examiner requests a new title for the invention that is “clearly indicative of the invention to which the claims are directed.” This objection to the title is respectfully traversed. Applicants respectfully note that the Examiner has not indicated how the present title is not indicative of the claims. Applicants note that present title, “curable resin composition”, matches the preamble of claims 1-4.

**The disclosure is objected to because of informalities (Office action point 2).**

The objection is overcome by the amendments to the specification. The underlining of variables a, b and m, has been removed on pages 3, 6, 8 and 13.

**Claims 2-4 are objected to (Office action point 3).**

The objection is overcome by the amendments to the claims. Claim 2 has been amended to remove the underlining of variables a, b and m.

**Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite (Office action point 5).**

The rejection of claims 1-4 is overcome by the amendments to the claims.

Regarding the term “introduction rate”, Applicants note that this term, which is a measurable parameter, is defined in the specification on page 4, lines 22-34. However, for clarity, the term “introduction rate” has been amended to –introduction ratio– in claim 1, and additional recitation defining the term has been added to the claim, as supported by the specification on page 4, lines 22-34.

In claim 2, “obtainable” has been amended to –obtained–, and “constituent atom” has been amended to –constituent atoms–.

**Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Isayama et al. (U.S. Patent No. 4,657,986) (Office action point 7).**

The rejection is overcome by the amendment to claim 1 limiting the introduction ratio to not less than 90%. The value of 90% is supported by the specification on page 4, lines 16-21.

The Examiner notes that Isayama et al. discloses an example with an introduction ratio of 85%. However, there is no teaching, suggestion or motivation in the reference for introduction ratio values of 90% or higher.

Applicants therefore assert that claims 1, 2 and 4, as amended, are novel and non-obvious over Isayama et al. ‘986.

**Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirose et al. (U.S. Patent No. 4,952,643) (Office action point 8).**

The rejection is overcome by the amendment to claim 1 limiting the introduction ratio to not less than 90%.

The Examiner notes that Hirose et al. discloses an example with an introduction ratio of 85%. However, there is no teaching, suggestion or motivation in the reference for introduction ratio values of 90% or higher.

Applicants therefore assert that claims 1, 2 and 4, as amended, are novel and non-obvious over Hirose et al. '643.

**Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Homma et al. (U.S. Patent No. 4,981,728) (Office action point 9).**

The rejection is overcome by the amendment to claim 1 limiting the introduction ratio to not less than 90%.

The Examiner notes that Homma et al. discloses an example with an introduction ratio of 87.5%. However, there is no teaching, suggestion or motivation in the reference for introduction ratio values of 90% or higher.

Applicants therefore assert that claims 1, 2 and 4, as amended, are novel and non-obvious over Homma et al. '728.

**Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isayama et al. (U.S. Patent No. 4,657,986) and further in view of Watabe et al. (U.S. Patent No. 5,811,566) (Office action point 11).**

The rejection is overcome by the amendment to claim 1 limiting the introduction ratio to not less than 90%.

Applicants have noted above that there is no teaching, suggestion or motivation in Isayama et al. for introduction ratio values of 90% or higher. Likewise, there is no such teaching, suggestion or motivation in Watabe et al.

Applicants therefore assert that claim 3 is novel and non-obvious over Isayama et al. and Watabe et al., taken separately or in combination.

**Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. (U.S. Patent No. 4,952,643) and further in view of Watabe et al. (U.S. Patent No. 5,811,566) (Office action point 12).**

The rejection is overcome by the amendment to claim 1 limiting the introduction ratio to not less than 90%.

Applicants have noted above that there is no teaching, suggestion or motivation in Hirose et al. for introduction ratio values of 90% or higher. Likewise, there is no such teaching, suggestion or motivation in Watabe et al.

Applicants therefore assert that claim 3 is novel and non-obvious over Hirose et al. and Watabe et al., taken separately or in combination.

Amendment under 37 CFR 1.111  
Katsuhiro ANDO et al.

U.S. Patent Application Serial No. 09/889,587  
Attorney Docket No. 010930

**Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Homma et al. (U.S. Patent No. 4,981,728) and further in view of Watabe et al. (U.S. Patent No. 5,811,566) (Office action point 13).**

The rejection is overcome by the amendment to claim 1 limiting the introduction ratio to not less than 90%.

Applicants have noted above that there is no teaching, suggestion or motivation in Homma et al. for introduction ratio values of 90% or higher. Likewise, there is no such teaching, suggestion or motivation in Watabe et al.

Applicants therefore assert that claim 3 is novel and non-obvious over Homma et al. and Watabe et al., taken separately or in combination.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

Attached hereto is a marked-up version of the changes made by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Amendment under 37 CFR 1.111  
Katsuhiro ANDO et al.

U.S. Patent Application Serial No. 09/889,587  
Attorney Docket No. 010930

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP

  
Daniel A. Geselowitz, Ph.D.

Agent for Applicants  
Reg. No. 42,573

DAG/plb  
Atty. Docket No. 010930  
Suite 1000  
1725 K Street, N.W.  
Washington, D.C. 20006  
(202) 659-2930



23850

PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

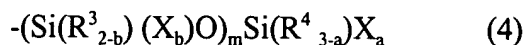
H:\FLOATERS\DAG\Amendments\010930 amend 4-21-03

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION:**

Please amend the paragraph on page 2, line 26 as follows:

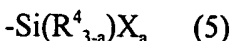
The term "reactive silicon group" in the context of the present invention means any group capable of forming a siloxane bond upon intergroup condensation and, as such, is not particularly restricted. However, the group represented by the following general formula (4) can be mentioned as a typical example.



(wherein  $\text{R}^3$  and  $\text{R}^4$  each represents an alkyl group containing 1 to 20 carbon atoms, an aryl group containing 6 to 20 carbon atoms, an aralkyl group containing 7 to 20 carbon atoms or a triorganosiloxy group of the formula  $(\text{R}')_3\text{SiO}-$ ; when two or more  $\text{R}^3$  and  $\text{R}^4$  groups are present, they may be the same or different;  $\text{R}'$  represents a univalent hydrocarbon group containing 1 to 20 carbon atoms and the three  $\text{R}'$  groups may be the same or different;  $\text{X}$  represents a hydroxyl group or a hydrolyzable group and when two or more  $\text{X}$  groups are present, they may be the same or different;  $a$  represents 0, 1, 2 or 3 and  $b$  represents 0, 1 or 2; as regards  $b$  in  $-(\text{Si}(\text{R}^3_{2-b})(\text{X}_b)\text{O})-$  which occurs in  $m$  repeats, the value of  $b$  may be different over the repeats;  $m$  represents an integer of 0 to 19; provided, however, that the relation of  $a + \sum b \geq 1$  is satisfied).

Please amend the paragraph beginning on page 3, line 28, as follows:

The reactive silicon group of the following general formula (5) is preferred from availability points of view.

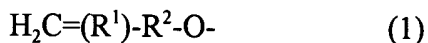


(wherein  $\text{R}^4$ ,  $\text{X}$  and  $a$  are as defined above)

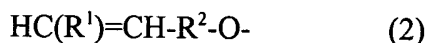
Please amend the paragraph beginning on page 6, line 13, as follows:

The method of producing the polyoxyalkylene polymer for use as component (I) of the invention is not particularly restricted but includes various methods. Particularly, the method which comprises reacting

(a) a polyoxyalkylene polymer terminating in an unsaturated group represented by the general formula (1):



or the general formula (2):



(wherein  $\text{R}^1$  represents a hydrocarbon group containing up to 10 carbon atoms and  $\text{R}^2$  represents a bivalent organic group containing 1 to 20 carbon atoms and at least one member selected from the group consisting of hydrogen, oxygen and nitrogen as constituent atoms) with

(b) a reactive silicon group-containing compound represented by the general formula (3):



(wherein  $\text{R}^3$ ,  $\text{R}^4$ ,  $\text{X}$ ,  $a$ ,  $b$  and  $m$  are as defined above)

in the presence of (c) a Group VIII transition metal catalyst is advantageous in that the reactive silicon group can be introduced into the molecular chain terminus at a rate of not less than 85%.

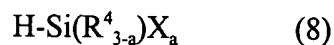


Please amend the paragraph beginning on page 8, line 11, as follows:

The (b) component reactive silicon group-containing compound need only to be a compound having at least one silicon group bound to said hydroxyl group and/or hydrolyzable group and at least one Si-H group per molecule. As representative examples, compounds of the following general formula (3) can be mentioned.



From availability points of view, in particular, a compound of the general formula (8) is preferred.



(wherein  $\text{R}^3$ ,  $\text{R}^4$ ,  $\text{X}$ ,  $\underline{a}$ ,  $\underline{b}$  and  $\underline{m}$  are as defined above)

Please amend the paragraph beginning on page 13, line 8, as follows (Twice amended):

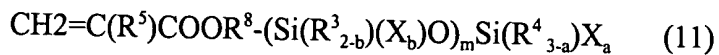
As the (I) component, a modification product derived from the reactive silicon group-containing polyoxyalkylene polymer can also be employed. As a representative example of such modification product, there can be mentioned the polymer obtainable by polymerizing a mixture of an alkyl (meth) acrylate monomer having an alkyl group containing 1 to 8 carbon atoms as represented by the following general formula (9) and/or an acrylic (meth)acrylate monomer having an alkyl group containing 10 or more carbon atoms as represented by the following general formula (10) and/or a reactive silicon group-containing alkyl (meth)acrylate monomer of the following general formula (11) in the presence of the reactive silicon group-containing polyoxyalkylene polymer. Aside from the above, it is also possible to use blends of the reactive silicon group-containing polyoxyalkylene polymer with polymers of the following compound (9), (10) and/or (11).



(wherein  $\text{R}^5$  represents a hydrogen atom or a methyl group;  $\text{R}^6$  represents an alkyl group containing 1 to 8 carbon atoms)



(wherein  $\text{R}^5$  represents a hydrogen atom;  $\text{R}^7$  represents an alkyl group containing not less than 10 carbon atoms)



(wherein  $\text{R}^5$  is as defined above;  $\text{R}^8$  represents a bivalent alkylene group containing 1 to 6 carbon atoms;  $\text{R}^3$ ,  $\text{R}^4$ ,  $\text{X}$ , a, b and m are as defined above).

**IN THE CLAIMS:**

Please amend claims 1 and 2 as follows:

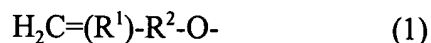
1. (Amended) A curable resin composition comprising:

(I) a reactive silicon group-containing polyoxyalkylene polymer wherein ~~a~~ an introduction ~~rate ratio~~ ratio of a reactive silicon group into ~~a molecular terminus chain termini~~, defined as the percentage of the termini into which the reactive silicon group has been introduced based on the total number of molecular chain termini, is not less than 85% 90% as determined by <sup>1</sup>H-NMR analysis, and

(II) an epoxy resin.

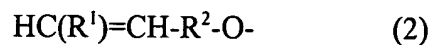
2. (Amended) The curable resin composition according to Claim 1

wherein the reactive silicon group-containing polyoxyalkylene polymer (I) is ~~obtainable~~ obtained by reacting (a) a polyoxylalkylene polymer terminating in an unsaturated group of either the general formula (1):



in the formula  $\text{R}^1$  represents a hydrocarbon group containing not more than 10 carbon atoms;  $\text{R}^2$  represents a divalent organic group containing 1 to 20 carbon atoms which contains one or more members selected from the group consisting of hydrogen, oxygen and nitrogen as the constituent ~~atom~~ atoms,

or the general formula (2):



in the formula  $R^1$  represents a hydrocarbon group containing not more than 10 carbon atoms;  $R^2$  represents a divalent organic group containing 1 to 20 carbon atoms which contains one or more members selected from the group consisting of hydrogen, oxygen and nitrogen as the constituent atom atoms,

with (b) a reactive silicon group-containing compound of the general formula (3):



in the formula  $R^3$  and  $R^4$  each represents an alkyl group containing 1 to 20 carbon atoms, an aryl group containing 6 to 20 carbon atoms, an aralkyl group containing 7 to 20 carbon atoms, or a triorganosiloxy group of the formula  $(\text{R}')_3\text{SiO}-$ ; when two or more  $R^3$  or  $R^4$  groups are present, they may be the same or different;  $R^1$  represents a univalent hydrocarbon group of 1 to 20 carbon atoms; the three of  $R'$  groups may be the same or different;  $X$  represents a hydroxyl group or a hydrolyzable group; when two or more  $X$  groups are present, they may be the same or different; a a represents 0, 1, 2 or 3; b b represents 0, 1 or 2; b b may be the same or different over m m repeats of  $-\text{Si}(\text{R}^3_{2-b})(\text{X}_b)-$   $\text{O}-$ ; m m represents an integer of 0 through 19; provided, however, that the condition of  $a + \Sigma b \geq 1$  is satisfied,

(c) in the presence of a Group VIII transition metal catalyst.